

We claim:

1. A method of imaging a biological sample with a microscopic  
5 imaging system, comprising the following steps:

(a) imaging the sample to produce a plurality of image-  
forming signals corresponding to a plurality of pixels on an  
image of the sample;

10 (b) analyzing said plurality of image-forming signals to  
produce a measure of image-forming features in said image,  
wherein said measure is a statistically significant indicator of  
pathology in portions of said image; and

15 (c) assigning a visually detectable marker to each of said  
portions of the image corresponding to image-forming signals that  
produced said measure.

2. The method of Claim 1, wherein said image-forming signal is  
optical density.

20 3. The method of Claim 2, further including the step of  
combining said marker with the image to produce an information-  
enriched image.

4. The method of Claim 2, wherein said marker is color.

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5. The method of Claim 3, wherein said marker is color.

6. The method of Claim 2, wherein said measure is a statistically significant combination of said optical-density features.

7. The method of Claim 6, wherein said marker is color.

8. The method of Claim 2, wherein said portions of the image are cell nuclei.

9. The method of Claim 2, wherein said microscopic imaging system comprises a plurality of individual miniaturized microscopes in an array microscope.

10. An information-enriched image produced by the method of Claim 2.

11. An information-enriched image produced by the method of Claim 9.

12. Apparatus for imaging a biological sample with a microscopic imaging system, comprising the following steps:

a light optical microscope;

means for imaging the sample to produce a plurality of  
5 image-forming signals corresponding to a plurality of pixels on  
an image of the sample;

means for analyzing said plurality of image-forming signals  
to produce a measure of image-forming features in said image,  
wherein said measure is a statistically significant indicator of  
10 pathology in portions of said image; and

means for assigning a visually detectable marker to each of  
said portions of the image corresponding to image-forming signals  
that produced said measure.

15 13. The apparatus of Claim 12, wherein said image-forming signal  
is optical density.

14. The apparatus of Claim 13, further including means for  
combining said marker with the image to produce an information-  
20 enriched image.

15. The apparatus of Claim 13, wherein said marker is color.

16. The apparatus of Claim 14, wherein said marker is color.

17. The apparatus of Claim 13, wherein said measure is a statistically significant combination of said optical-density features.

5 18. The apparatus of Claim 17, wherein said marker is color.

19. The apparatus of Claim 13, wherein said portions of the image are cell nuclei.

10 20. The apparatus of Claim 13, wherein said microscopic imaging system comprises a plurality of individual miniaturized microscopes in an array microscope.

15 21. An information-enriched image produced by the apparatus of Claim 13.

22. An information-enriched image produced by the apparatus of Claim 20.